

CLAIMS

1. A Ni based alloy with excellent corrosion resistance relative to supercritical water environments containing inorganic acids comprising:

5 Cr: from more than 43% to 50% or less, Mo: 0.1% to 2%, Mg: 0.001% to 0.05%,
N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

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2. A Ni based alloy with excellent corrosion resistance relative to supercritical water environments containing inorganic acids comprising:

Cr: from more than 43% to 50% or less, Mo: 0.1% to 2%, Mg: 0.001% to 0.05%,
N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

15 further comprising either one, or both, of Fe: 0.05% to 1.0% and Si: 0.01% to
0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

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3. A member for a supercritical water process reaction apparatus,
wherein said member comprises a Ni based alloy according to claim 1 or 2.

4. A Ni based alloy with excellent corrosion resistance relative to supercritical
25 water environments containing inorganic acids comprising:

Cr: from 29% to less than 42%, Ta: from more than 1% to 3% or less, Mg:
0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
5 0.05% or less.

5. A Ni based alloy with excellent corrosion resistance relative to supercritical
water environments containing inorganic acids comprising:

Cr: from 29% to less than 42%, Ta: from more than 1% to 3% or less, Mg:
10 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
further comprising Mo: 0.1% to 2%,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

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6. A Ni based alloy with excellent corrosion resistance relative to supercritical
water environments containing inorganic acids comprising:

Cr: from 29% to less than 42%, Ta: from more than 1% to 3% or less, Mg:
0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
20 further comprising either one, or both, of Fe: 0.05% to 1.0% and Si: 0.01% to
0.1%,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

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7. A Ni based alloy with excellent corrosion resistance relative to supercritical water environments containing inorganic acids comprising:

Cr: from 29% to less than 42%, Ta: from more than 1% to 3% or less, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

5 further comprising Mo: 0.1% to 2%,

further comprising either one, or both, of Fe: 0.05% to 1.0% and Si: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

8. A member for a supercritical water process reaction apparatus, wherein said member comprises a Ni based alloy according to any one of claims 4 to 7.

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9. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

20 and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

10. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

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Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising Nb: from more than 1.0% to 6% or less,

and a remainder as Ni and unavoidable impurities,

5 wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

11. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

10 Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and Hf: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

15 wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

12. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

20 Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

25 wherein a quantity of C amongst said unavoidable impurities is restricted to

0.05% or less.

13. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

5 Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising Nb: from more than 1.0% to 6% or less,

further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and

Hf: 0.01% to 0.1%,

10 and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to

0.05% or less.

14. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

15 Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising Nb: from more than 1.0% to 6% or less,

further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to

20 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to

0.05% or less.

25 15. A Ni based alloy with excellent resistance to stress corrosion cracking in

supercritical water environments containing inorganic acids comprising:

Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and

5 Hf: 0.01% to 0.1%,

further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to

0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to

10 0.05% or less.

16. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 36% to less than 42%, W: from more than 0.01% to less than

15 0.5%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

further comprising Nb: from more than 1.0% to 6% or less,

further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and

Hf: 0.01% to 0.1%,

further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to

20 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to

0.05% or less.

25 17. A member for a supercritical water process reaction apparatus,

wherein said member comprises a Ni based alloy according to any one of claims 9 to 16.

18. A Ni based alloy with excellent resistance to stress corrosion cracking in
5 supercritical water environments containing inorganic acids comprising:
Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than
1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
10 0.05% or less.

19. A Ni based alloy with excellent resistance to stress corrosion cracking in
supercritical water environments containing inorganic acids comprising:
Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than
15 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
further comprising Nb: from more than 1.0% to 6% or less,
and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

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20. A Ni based alloy with excellent resistance to stress corrosion cracking in
supercritical water environments containing inorganic acids comprising:
Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than
1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
25 further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and

Hf: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

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21. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

10 further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to 0.05% or less.

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22. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,

20 further comprising Nb: from more than 1.0% to 6% or less,

further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and

Hf: 0.01% to 0.1%,

and a remainder as Ni and unavoidable impurities,

wherein a quantity of C amongst said unavoidable impurities is restricted to

25 0.05% or less.

23. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than
5 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
further comprising Nb: from more than 1.0% to 6% or less,
further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to
0.1%, and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
10 0.05% or less.

24. A Ni based alloy with excellent resistance to stress corrosion cracking in supercritical water environments containing inorganic acids comprising:

Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than
15 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and
Hf: 0.01% to 0.1%,
further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to
0.1%,
20 and a remainder as Ni and unavoidable impurities,
wherein a quantity of C amongst said unavoidable impurities is restricted to
0.05% or less.

25. A Ni based alloy with excellent resistance to stress corrosion cracking in

25 supercritical water environments containing inorganic acids comprising:

Cr: from more than 28% to less than 34%, W: from more than 0.1% to less than 1.0%, Mg: 0.001% to 0.05%, N: 0.001% to 0.04%, Mn: 0.05% to 0.5%,
 further comprising Nb: from more than 1.0% to 6% or less,
 further comprising either one, or both, of Mo: from 0.01% to less than 0.5% and
 5 Hf: 0.01% to 0.1%,
 further comprising either one, or both, of Fe: 0.1% to 10% and Si: 0.01% to 0.1%,
 and a remainder as Ni and unavoidable impurities,
 wherein a quantity of C amongst said unavoidable impurities is restricted to
 10 0.05% or less.

26. A member for a supercritical water process reaction apparatus,
 wherein said member comprises a Ni based alloy according to any one of claims
 18 to 25.

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